Evaluating pumping impacts on lakes, streams, and wetlands

Groundwater pumping is developing rapidly in many parts of the state, often with poorly-known impacts on lakes, streams, and wetlands. One area of the state where pumping impacts have long been predicted and are reasonably understood is the central sands. About 20% of the state's groundwater pumping occurs in the region (Portage, Waushara, and Adams are the first, third and fourth largest pumping counties).

Three recent studies on the linkages of pumping and surface water stresses have been completed in the central sands, one study is in progress, and a fifth will be initiated in July 2013. These are in addition to historical studies by the USGS in the 1960s. A Little Plover River study (Clancy et al. 2009) quantified pumping impacts on this flow-stressed stream, concluding that pumping on average takes 45% of the streams average flow. A broader study on the greater central sands area (Kraft et al. 2010, Kraft et al. 2012) concluded that numerous lakes have their water levels depressed by three feet and more due to pumping, and that most central sands headwaters streams are pumping impacted. The broader study has been supplemented through 2011 by Kraft et al. 2012 and an ongoing study slated for completion in 2014. In July 2013 a detailed modeling project is anticipated to being in the Little Plover region with the goal of understanding how to manage groundwater pumping within a constraint of healthy stream discharges.

References

Clancy, K., G.J. Kraft, and D.J. Mechenich. 2009. Knowledge development for groundwater withdrawal around the Little Plover River, Portage County, Wisconsin. Center for Watershed Science and Education, University of Wisconsin – Stevens Point. 47 pp.

Kraft, G.J., D.J. Mechenich, K. Clancy, and J. Haucke. 2012. Irrigation effects in the northern lake states Wisconsin central sands revisited. Ground Water Journal 50:308-318.

Kraft, G.J. and D.J. Mechenich. 2010. Groundwater Pumping Effects on Groundwater Levels, Lake Levels, and Streamflows in the Wisconsin Central Sands. Report to the Wisconsin Department of Natural Resources in Completion of Project NMI00000247 Center for Watershed Science and Education, University of Wisconsin – Stevens Point / Extension. http://www.uwsp.edu/cnr/watersheds/Reports_Publications/ reports_publications.htm .

Kraft, G.J., D.J. Mechenich, K. Clancy, and J. Haucke. 2012. Information Support for Groundwater Management in the Wisconsin Central Sands, 2009-2011. A Report to the Wisconsin Department of Natural Resources In Completion of Project NMA00000253. Center for Watershed Science and Education, University of Wisconsin – Stevens Point / Extension.